When seated in the cylindrical slot portion **26** of a first redundant hinge element **22**, the cylindrical portion **24** of a second redundant hinge element **22** is substantially in co-axial alignment with the cylindrical slot portion **26** of the first redundant hinge element **22**. Moreover, the cylindrical portion **24** of the second redundant hinge element **22** has an axis of rotation of approximately 120 degrees when seated in the cylindrical slot portion **26** of the first redundant hinge element **22**.

This hinge assembly **20** takes the place of the single pivot hinge normally used in notebook computers **10**. Moreover, the hinge assembly **20** is assembled with a geometric interference fit that allows rotation of the individual interlocking hinge elements **22**, but also retains enough friction to allow static positioning of the lid **16** and screen **18**. Instead of the entire cylindrical portion **24** frictioning against the cylindrical slot portion **26**, alternative embodiments may use short sections or "plugs" of high friction material (e.g., rubber) to replace the homogenous material in portion **24**, so that only these sections of the cylindrical portion **24** friction against the cylindrical slot portion **26**.

FIG. **3**A also illustrates how a ribbon cable **36** may be threaded through the cable raceways **28**.

FIG. **4**A shows a second perspective view of the hinge assembly **20** and FIG. **4**B shows a second axial cross-sectional view of the hinge assembly **20**. These views illustrate the shape of the hinge assembly **20** when the lid **16** is closed and covers the base **12**. FIG. **4**A also illustrates a ribbon cable **36** that is threaded through the cable raceways **28**.

In the preferred embodiment, the interlocking redundant hinge elements **22** of the hinge assembly **20** are comprised of a non-metalic frictional material, although other suitable materials may be selected as well. It is preferred that the material have a degree of resilience that allows the frictional material of the inner surface of the cylindrical slot portion **26** to grip the outer surface of the cylindrical portion **24**.

Referring again to FIG. **1**, as well as FIGS. **5** and **6**, the cylindrical portion **24** and the cylindrical slot portion **26** are adapted to connect the hinge assembly **20** to connect to both the base **12** and lid **16** in a manner that provides pivotal connection between these parts. In a preferred embodiment, the base **12** is provided with a connector mechanism for the hinge assembly **20** in the form of a cylindrical slot portion **26** protruding from one end of the base **12** for engagement with the bottom-most cylindrical portion **24** of the hinge assembly **20**. Similarly, the lid **16** is provided with a connector mechanism for the hinge assembly **20** in the form of a cylindrical portion **24** protruding from one end of the lid **16** for engagement with the top-most cylindrical slot portion **26** of the hinge assembly **20**.

Note, however, that the invention in its broadest aspect is not limited to particular forms of connector mechanisms. A variety of designs of connector mechanisms may be contemplated which are able to provide connection of the hinge assembly **20** to different parts of the base **12** and lid **16**.

The hinge assembly **20** thus constituted allows for more than 180 degrees of rotation between the base **12** and lid **16**. Moreover, when the base **12** and lid **16** are open to a 180 degree inclination, the notebook computer **10** is flat, because there is no "stepped" area underneath the lid **16** where it attaches to the base **12**. This position is shown in FIG. **5**. Further, the geometry and mechanical requirements of the hinge assembly **20** reduce the overall thickness of the notebook computer.

Indeed, the hinge assembly **20** allows a full 360 degree pivoting between the lid **16** and base **12**, where they can touch front to front (fully closed position) or be fully folded back on each other to touch back to back (fully open position). This fully open position is shown in FIG. **6**.

CONCLUSION

This concludes the description of the preferred embodiment of the invention. The following describes some alternative embodiments for accomplishing the present invention.

For example, any apparatus or appliance that requires a hinge so that its components can be tilted and positioned in a range of orientations could benefit from the present invention. Specifically, as noted above, the present invention could also be used with notebook computers, laptop computers, handheld computers, palmtop computers, etc., as well as other electronic devices.

In summary, the present invention discloses a redundant hinge element and hinge assembly made therefrom that are adapted to provide pivotal connection between casings of a notebook computer.

The foregoing description of the preferred embodiment of the invention has been presented for the purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise form disclosed. Many modifications and variations are possible in light of the above teaching. It is intended that the scope of the invention be limited not by this detailed description, but rather by the claims appended hereto.

What is claimed is:

1. A hinge device for pivotally connecting first and second parts of a casing, comprising:

(a) a plurality of interlocking, redundant hinge elements that are assembled together to create a hinge assembly; and

(b) each of the redundant hinge elements comprised of a cylindrical portion and a cylindrical slot portion that is partially open to accept the cylindrical portion of an adjacent, interlocking, redundant hinge element, wherein the cylindrical slot portion includes one or mote retention wings;

(c) wherein each end of the hinge assembly is adapted for connection to one of the first and second parts of the casing such that rotation of the hinge assembly causes pivotal motion between the first and second parts of the casing.

2. The hinge device of claim **1**, wherein the cylindrical portion includes one or more cable raceways.

3. The hinge device of claim **1**, wherein a connecting portion between the cylindrical portion and the cylindrical slot portion includes one or more pass-thru slots.

4. The hinge device of claim **1**, wherein the hinge assembly pivotally the connects first and second parts of the casing.

5. The hinge device of claim **4**, wherein the casing comprises a casing selected from a group comprising a notebook computer casing, a laptop computer casing, a handheld computer casing, and a palmtop computer casing.

6. The hinge device of claim **4**, wherein the first part comprises a base of the casing and the second part comprises a lid of the casing.

7. The hinge device of claim **6**, wherein the hinge assembly allows the lid to be tilted and positioned with respect to the base in a range of inclinations between a closed position and a maximum tilt position.

8. The hinge device of claim **1**, wherein the cylindrical portion of a first redundant hinge element is substantially in